

## CLAIMS

1. A method of producing carbon fibers which comprises oxidative-polymerizing a compound having an aromatic ring to obtain a fibril-shaped polymer and firing the fibril-shaped polymer in a non-oxidizing atmosphere.

2. A method of producing carbon fibers according to claim 1, wherein the compound having the aromatic ring is a compound having a benzene ring or an aromatic heterocyclic ring.

3. A method of producing carbon fibers according to claim 2, wherein the compound having the aromatic ring is at least one compound selected from the group consisting of aniline, pyrrole, thiophene and derivatives thereof.

4. A method of producing carbon fibers according to any one of claims 1 to 3, wherein the oxidative-polymerization is an electrolytic oxidative-polymerization.

5. A catalyst structure characterized by supporting fine particles of a noble metal on the carbon fibers produced by a method as claimed in any one of claims 1 to 4.

6. A catalyst structure according to claim 5, wherein the carbon fibers are three-dimensionally continuous.

7. A catalyst structure according to claim 5, wherein the fine particles of the noble metal are supported on the carbon fibers through an electroplating.

8. A catalyst structure according to claim 5, wherein the noble metal includes at least Pt.

9. A membrane electrode assembly for a solid polymer fuel cell comprising a solid polymer electrolyte membrane, catalyst layers arranged on both sides of the solid polymer electrolyte membrane, and a diffusing layer arranged on one side of the catalyst layer, characterized in that the catalyst layer comprises a catalyst structure as claimed in any one of claims 5 to 8 and a polymer electrolyte.

10. A solid polymer fuel cell characterized by providing a membrane electrode assembly as claimed in claim 9.